

AIR WAR COLLEGE

4

Research Report

SUN TZU IN THE AGE OF TECHNOLOGY

AD-A258 442



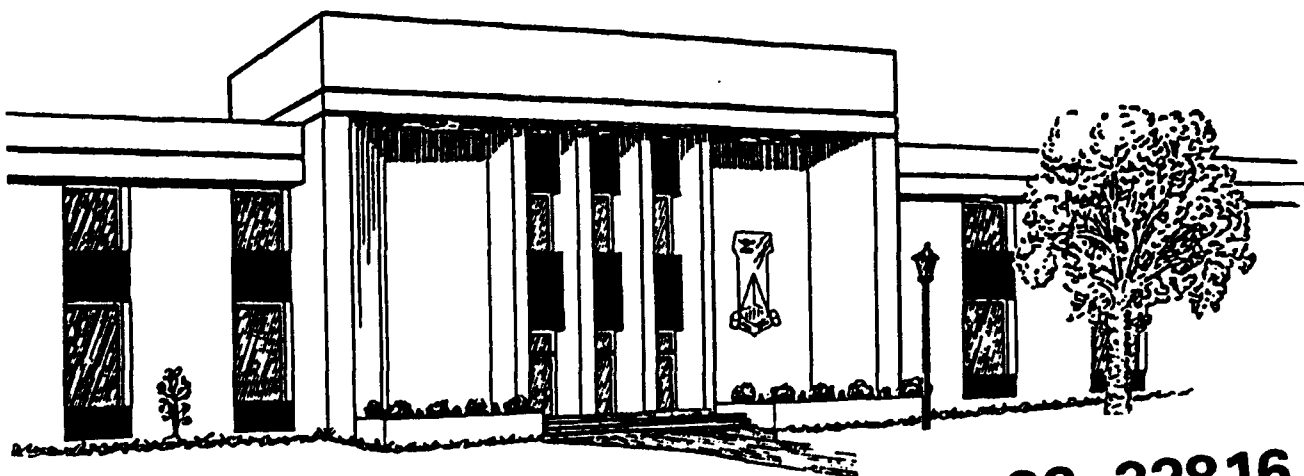
DOUHET-MITCHELL INTERNATIONAL AIR POWER TROPHY

DTIC
ELECTE
DEC 28 1992
S A D

ERIC N. JOHNSON

COLONEL, USAF

1992



92-32816



92 12 23 174

Air University
United States Air Force
Maxwell Air Force Base, Alabama

Approved For Public
Release: Distribution Unlimited

AIR WAR COLLEGE

AIR UNIVERSITY

National Security Studies Departmental Paper

"Sun Tzu in the Age of Technology"

by

Eric N. Johnson
Colonel, USAF

DTIC QUALITY CONTROL

Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail. and/or Special
A-1	

MAXWELL AIR FORCE BASE, ALABAMA

7 February 1991

Sun Tzu, over 2,500 years ago, fully understood that a general who does his job too well just doesn't get any respect.

"Anciently those called skilled in war conquered an enemy easily conquered," Sun Tzu said, "and therefore the victories won by a master of war gain him neither reputation for wisdom nor merit for valour." ¹

We heard much of the same thing about the war in the Gulf.

After watching the full-scale surrender of Iraqi soldiers in the Kuwaiti desert, the common interpretation was that the much-vaunted Iraqi army was greatly over-rated. "If it only took four days of ground combat to defeat them," the standard line goes, "they couldn't have been so tough after all."

As usual, the critics got it all wrong. The Iraqis' surrender came as such as surprise because Americans have come to expect their enemies to be defeated only after major land battles. Only then, or so a hundred years of history tells us, will we be able to impose our will on a broken enemy. That didn't happen in Desert Storm. What was the natural assumption? If there was no major battle, and there were no major casualties, it must follow that there was no major enemy.

The fallacy in that logic path is that the Iraqi army was, in fact, a battle-hardened and capable fighting force. However, the Iraqi soldiers surrendered so easily because they had never fought an enemy in the same way they fought the coalition. The surprising part to Americans was that we had never fought this way before either, for this was the

¹ Sun Tzu, *The Art of War*, trans by Samuel B. Griffith. London: Oxford University Press, 1963, p.87

first time in history that a modern conventional army had been defeated by airpower, with land and sea power in a support role.

The most dramatic picture of the strength of airpower to come out of the Gulf War was not the video footage of a GBU-15 bomb going down the stack of the Iraqi Air Force's headquarters building. The most forceful presentation of the effects of airpower was the picture of Iraqi soldiers crawling out of a bunker to surrender to a television news crew.

The important question is, "Why did they surrender?"

The answer is that the American way of war had changed. The guiding spirit of this change was a long-dead Chinese general who, 2,500 years ago, pointed the way towards how airpower can be used more effectively to win the war on the battlefield. This general, Sun Tzu, in his teachings in *The Art of War*, pointed out the path to success which airpower followed in the War in the Gulf and the path that airpower should follow to ensure its effective application in the future.

How then did airpower change the nature of war in the Gulf?

To answer this question we have to look at what the American way of war was before Desert Storm.

The American way of war closely follows the general outline of what Carl von Clausewitz stated was the ideal form of war--that is, his delineation of war in its most violent state. This common understanding (or misunderstanding) of Clausewitz defined the American way of war from the middle of the nineteenth century to the last quarter of the twentieth century.

Central to Clausewitz' genius was his recognition that war is not

purely a military affair and that it needs to keep in balance a remarkable trinity of the people, their government, and the commander and his army.

However, Clausewitz argued that the center of gravity for winning wars laid in one part of that trinity, and that was the general and his army. Clausewitz believed that:

- Destruction of the enemy forces is the overriding principle of war, and so far as positive action is concerned, the principle way to achieve our object.
- Such destruction of forces can usually be accomplished only by fighting.
- Only major engagements involving all forces lead to major success
- The greatest successes are obtained where all engagements coalesce into one great battle....

These facts lead to a dual law whose principles support each other:

- Destruction of the enemy's forces is generally accomplished by means of great battles and their results; and,
- The primary object of great battles must be the destruction of the enemy's forces.²

Not for Clausewitz, then, was a general who was able to defeat the enemy without fighting. In fact the whole idea of winning without a decisive battle was absurd. He denigrated those

"historians and theorists..who point out...a battle that was never fought [as] evidence of higher skill. This line of thought had brought us almost to the point of regarding, in the economy of war, battle as a kind of evil brought about by mistake--a morbid manifestation to which an orthodox, correctly managed war should never have to resort. Laurels were to be reserved for those generals who knew how to conduct a war without bloodshed..Recent history has scattered such nonsense to the winds." ³

² Carl von Clausewitz, *On War*, ed. and trans. by Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press., p. 258.

This central tenet of Clausewitz—that destruction of the enemy's forces was the key to victory—became the core belief of American (and Western) military thinking up to the time of Desert Storm.

This strategy of annihilation was well in place by the time of the Civil War. Russell F. Weigley, in *The American Way of War*, observes that General Lee entertained the illusion about being able to destroy enemy armies in a single battle, despite the changes brought about by the technology of rifled firearms, rail transport, and river transport. On the other hand, General Grant recognized that Clausewitz' ideal of a single decisive battle was no longer possible. Still Grant, however, "became the prophet [for the next century] of a strategy of annihilation in a new dimension, seeking the literal destruction of the enemy's armies as the means to victory."⁴

By World War I, various general staffs and political leaders still clung to the hope that by winning quick and decisive Napoleonic battles they could avoid the protracted wars they saw in the American Civil War. But as von Schlieffen's plan and Churchill's Gallipoli plan failed to achieve decisive victories on the battlefield, warfare seemed doomed to remain mired in long and drawn-out wars of attrition.

The questions for strategists between the wars was, "How can we avoid another stalemated war in the trenches? Is it possible to avoid fighting another war of annihilation?"

The answer seemed to be both a cause of and a cure for attrition

³ Clausewitz, p. 259.

⁴ Russell F. Weigley, *The American Way of War*. Bloomington IN: Indiana University Press, p. 145

warfare. That solution was technology, an aspect of war that only became prominent after Clausewitz' death. Just as technology seemed to have destroyed the effectiveness of operational art, new technologies also held out the hope for less protracted wars in the future.

Just as Clausewitz had argued that, all else being equal, the army that brought the most men to the battle would win, generals from the 1860's on argued that--all else being equal--technological innovation could make a decisive difference.⁵

Michael Handel has theorized that, in view of the central importance of military technology to all aspects of contemporary warfare, we can assume that if Clausewitz had lived to see inventions such as the railroads, breech loading artillery and breech-loading rifles, he would probably have added a fourth dimension to his remarkable trinity. In addition to the people, the government, and the army, he might well have proposed the addition of technology, a material and qualitative factor which had changed the immaterial parts of the remarkable trinity in irreversible ways.⁶

No one argued the case for technology more strongly than the airmen who, between the two world wars, attempted to determine the real meaning of airpower.

In the period between the wars, airmen developed the belief that the technology of airpower would eliminate wars of annihilation by striking directly at the center of the enemy's social strength, at the will

⁵ Clausewitz, p.282

⁶ Michael I. Handel, "Clausewitz in the Age of Technology," *The Journal of Strategic Studies*, Jun/Sep 1986, p. 59

and capacity of the opposing society to carry on the war. Wars of annihilation, they argued, would become a thing of the past. As Maj Gen James Fechet, Chief of the Air Corps in 1927, explained the value of airpower,

the objective of war is to overcome the enemy's will to resist, and the defeat of his army, his fleet or the occupation of his territory is merely a means to this end and *none of them is the true objective*. If the true objective can be reached without the necessity of defeating or brushing aside the enemy force on the ground or water and the proper means furnished to subdue the enemy's will and bring the war to a close, the object of war can be obtained with less destruction and lasting effects than has heretofore been the case.⁷

Unfortunately for airpower enthusiasts, the events of the war disproved this theory. There were two essential reasons why this was so.

First, as Michael Howard notes, "technology was not yet sufficiently advanced to be able to eliminate the traditional requirements of operational and logistical strategy in this manner."⁸

The second reason was that unrestricted air combat in its most undiluted form, as first expounded by General Douhet, was too horrible for Americans to accept. According to Douhet, the mission of airpower would be to

inflict the greatest damage in the shortest possible time.... By bombing the most vital civilian centers it could spread terror through the nation and quickly break down [the opponent's] material and moral resistance...

After dropping tons of "high explosive, incendiary, and gas bombs" on the centers of large cities, "normal life would be impossible in this constant nightmare of imminent death and destruction...A complete breakdown of the social structure

⁷ Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, Maxwell AFB, AL: Air University Press, p.63, my italics.

⁸ Michael Howard, "The Forgotten Dimensions of Strategy", *Foreign Affairs* 57, Summer 1979, p. 981.

cannot but take place in a country subjected to this kind of merciless pounding from the air. The time would soon come when, to put an end to the horror and suffering, the people themselves, driven by the instinct of self-preservation, would rise up and demand an end to the war -- this before their army and navy had time to mobilize at all.⁹

Douhet's description of warfare was alien to the American ethos. Although the American way of war included the annihilation of ground troops, it did not include the gassing of civilians. Americans preferred to balance the requirements of a short war with a desire for minimal casualties on both sides. Gassing and firebombing the general population to strike at the will of the opposing society was not a preferable option.

Airpower, then, was not able to prove itself able in World War II to destroy the will of the people and make land warfare unnecessary. Gen Spaatz, commander of the US Strategic Air Forces in Europe during World War II, observed that "the war against Germany was fundamentally an infantry war supported by air power, much as the war against Japan was fundamentally a naval war supported by the air."¹⁰ Russell Weigley makes the additional assertion that World War II still followed the American's historic way of war. By using air and ground together in Europe, Army planners hoped to achieve strategy similar to Grant's strategy of annihilation. They believed that "an army strong enough to choose the strategy of annihilation should always choose it, because the most certain and probably the most rapid route to victory

⁹ Giulio Douhet, *The Command of the Air*, trans. by Dino Ferrari. Washington, DC: Office of Air Force History, 1983, pp. 53-58.

¹⁰ Carl A. Spaatz, "If We Should Have to Fight Again," *Life*, 5 July 1948, p35, in "Essay P: Strategic Attack," *Air Force Manual 1-1, Volume II*, Sep 91, p. 155.

lay through the destruction of the enemy's armed forces." 11

The lesson of World War II as seen by those outside the Air Force was that airpower—in conventional wars—best served when it served as an adjunct to land and sea power. The army believed, in the spirit of U.S. Grant, that airpower, "like all other means calculated to bring the enemy to its knees are contributory to the main proposition, which is now, as it ever has been, namely, the defeat of his main forces."¹²

Twenty years later, the inability to close with—or even find—those main forces in Vietnam led the U.S. Army into near catatonia. The incapability of the Army to successfully prosecute this war in its usual style of annihilation led Russell Weigley, in 1975, to suggest that "at no point on the spectrum of violence does the use of combat offer much promise for the United States today...Because the record of non-nuclear limited war in obtaining acceptable decisions at tolerable cost is also scarcely heartening, the history of usable combat may at last be reaching its end." ¹³

In the same way Sam Huntington concluded, in 1986, that although the United States had 40 years of success in preventing nuclear wars, this contrasted rather dramatically with our 40 years of failure since World War II to win conventional wars. He concludes that following Vietnam we should return to the American way of war, which is that

the United States is a big country and it should fight wars in a big way. Our big advantage is mass; we should not hesitate to

¹¹ Weigley, p. 313.

¹² Weigley, p. 442.

¹³ Weigley, p.477

use it. Don't fight smarter; fight bigger. Bigness, not brains is our advantage, and we should exploit it. If we have to intervene we should intervene with overpowering force.... The American military tradition from Grant and Sherman to Eisenhower and Nimitz was to seek out and destroy the enemy's military forces. This may at times lead, as the critics allege, to a total disregard of strategic maneuver and deception and a commitment to attack head-on where the enemy is strong, but it does rest on the correct understanding that the principle purpose of military forces is to crush other military forces.¹⁴

The apparent consensus seemed to be that American could not win in war unless it maintained its historic dependence on annihilation as the preferred means of war-winning. The technology available seemed to work against us. Clausewitz' one great battle, given the technology available to our foes, would result in more lives lost—on both sides of the battle—than a democracy could sustain. Modern conventional wars, if not decided in a single battle, apparently tended to deteriorate into protracted wars of attrition. But what other way was available? By the early 1980's American fighting forces seemed to be in a dilemma of their own technology. To paraphrase Dwight Eisenhower, nuclear war was unthinkable, and conventional wars were unwinnable.

The way to a solution was shown by Sun Tzu.

He, too, recognized that "there never was a protracted war from which a country has benefited." ¹⁵ However, Sun Tzu's core belief was that the best way to avoid protracted wars was not to fight them in the first place. The best action was not — as Clausewitz suggests-- to search out the decisive battle, but to put the enemy into such a disadvantageous position that he will not want to fight. "For to win one hundred

¹⁴ Samuel Huntington, "Playing to Win," *The National Interest*, Spring, 1986, p. 22-23

¹⁵ Sun Tzu, p. 73.

victories in one hundred battles is not the acme of skill," Sun Tzu states. "To subdue the enemy without fighting is the acme of skill." ¹⁶ "Those skilled in war subdue the enemy's army without battle. They capture his cities without assaulting them and overthrow his state without protracted operations." ¹⁷

The best way to defeat the enemy was to "defeat his strategy and disrupt his alliances." ¹⁸ Only when the enemy could not be overcome by these means would there be a recourse to armed force.

How was this force to be used? Certainly not in a battle of annihilation. The idea was that if the enemy's will could not be broken by means outside of war, the will of the enemy's army to resist could be broken in war by disorienting his communications, by isolating him on the battlefield, by attacking the mind of his general. Essentially, the enemy would be so disorganized and disoriented by the prelude to battle that the battle itself would be anti-climactic.

"The enemy, then, was easily conquered because the experts previously had created appropriate conditions...To win a hard-fought battle or to win by luck is no mark of skill...A victory gained before the situation has crystallized is one the common man does not comprehend. Thus its author gains no reputation for sagacity...When you subdue your enemy without fighting who will pronounce you valorous?" ¹⁹

¹⁶ Sun Tzu, p.73.

¹⁷ Sun Tzu, P. 79.

¹⁸ Sun Tzu, P.74.

¹⁹ Sun Tzu, p.86-7.

How does the skillful general do this? In three ways:

- By bringing two kinds of different forces to to the campaign,
- Through the use of "foreknowledge," and
- By using deception.

There are, says Sun Tzu, two kinds of force that a wise general brings to a campaign. One force is the *cheng* (the orthodox) force; the other is the *ch'i* (unorthodox, unique, rare, wonderful) force. The *cheng* force was the fixing force, that which engaged the enemy and held him in place, which the *ch'i* force was the flanking force that attacked the deep flanks and rear, the force that cut off the enemy's lines of communication and hit where least expected.

General Samuel Griffith notes in his translation of *On War*, that

the enemy, engaged by the *cheng* force was defeated by the *ch'i* force or forces.... We may define the *cheng* element as fixing and the *ch'i* as flanking or encircling, or again, as the force(s) of distraction and the force(s) of decision. ... A *ch'i* operation is always unexpected, strange, or unorthodox; a *cheng*, more obvious. When Sun Tzu said to engage with the *cheng* but to win with the *ch'i* he was implying that distractive effects are necessary to ensure that decisive blows may be struck where the enemy is least prepared and where he does not anticipate them.²⁰

What helps the general use these forces effectively comes from what Sun Tzu calls "foreknowledge."

Now the reason the enlightened prince and the wise general conquer the enemy whenever they move and their achievements surpass those of ordinary men is foreknowledge...What is called 'foreknowledge' cannot be elicited from spirits, nor from gods, nor by analogy with past events, nor from calculations. It must be obtained from men who know the enemy situation.²¹

²⁰ Sun Tzu, p. 42-3.

²¹ Sun Tzu, p. 144-5.

Armed with this foreknowledge, Sun Tzu states that the *ch'i* and *cheng* forces can then be judiciously applied using what we today call a "force multiplier," that is, deception.

All warfare is based on deception.
Therefore, when capable, feign incapacity; when active, inactivity.
When near, make it appear that you are far away; when far away, that you are near.
Offer the enemy a bait to lure him; feign disorder and strike him.
Where he concentrates, prepare against him; where he is strong, avoid him.²²

So how does this apply to the conventional use of airpower? The first indication came in Linebacker I Vietnam.

As opposed to the Rolling Thunder and Freedom Train campaigns which focused on the will of the North Vietnamese civilian population, Linebacker I used the *ch'i* force to bomb those targets in the North which complemented the *cheng* force of the Army of the Republic of Vietnam as they conducted battlefield operations against the North Vietnamese army in the field in South Vietnam. Robert A. Pape argues that in Linebacker I (as well as in Linebacker II)

airpower played a principal role in thwarting the North's strategy. Air interdiction reduced the flow of resources to NVA units, which diminished the North's combat power by creating firepower shortages and disrupting mobility. American air power had this effect largely because, by switching from guerrilla to conventional warfare, Hanoi adopted a military strategy vulnerable to interdiction bombing."²³

The key point here is that bombing civilian-oriented targets did not

²² Sun Tzu, p. 66.

²³ Robert A. Pape, Jr., "Coercive Air Power in the Vietnam War," *International Security*, Fall 1990, p. 228.

effectively break the will of the North Vietnamese civilian population nor its government. However, attacking military targets associated with a conventional field force isolated the troops in the field from their source of supply. Linebacker I pointed out "if hitting targets in the enemy's homeland dramatically impairs his confidence *of battle-field success*, then he is likely to change his behavior."²⁴

While Linebacker I was the indication of what airpower was best capable of doing in a conventional war, Desert Storm was the demonstration of how advanced technology enabled airpower to become a truly effective *chi'i* force and give the commander the needed foreknowledge to use that *chi'i* force effectively.

For the first time in a war the coalition forces in Desert Storm "effectively used all of its the various space and satellite systems to support field commanders."²⁵ This gave the field commanders what Sun Tzu demanded of his network of spies: the *foreknowledge* to know where friendly and enemy forces were located. The network of intelligence sensors, precision navigation data and enhanced communications gave the coalition commanders "the ability to understand what was going on in the field to a degree that had never been achieved in any previous military operations."²⁶

At the same time, coalition airpower was able to achieve sun Tzu's hoped-for deception by putting Iraqi communications and air defenses on the receiving end of an electronic storm, which, in the words of Gen Schwartzkopf, "had taken out [the enemy's] eyes." Much of the credit

²⁴ Pape, p. 231, my italics.

²⁵ William J. Perry, "Desert Storm and Deterrence, *Foreign Affairs*, Fall 1991, p. 47.

²⁶ Smith, p. 48.

for the amazingly low aircraft loss rate goes to airpower's ability to wage a war of electronic deception that confused and deceived Iraqi air defenses and communications. The F-117A, area jammers, and electronic countermeasure airplanes and pods proved their ability "when near, [to] make it appear that you are far away, when far away, that you are near." At the same time, the repeated pre-air-strike tactic of flying up to the Iraqi border and then turning back into Saudi Arabia lulled Saddam Hussein's air defense radar operators into a false sense of security.

Armed with foreknowledge and the means to deceive the enemy, the Desert Storm field commanders were able to use technology to field the world's most lethal *ch'i* force in history. As the land forces used the *cheng* force to hold the enemy, airpower's *ch'i* attacked the enemy's deep flanks and rear. The targets were of two types:

- Those that would isolate the enemy and reduce his hope for success in the field. These included radio and telephone centers, electric power systems, ammunition factories, military goods distribution centers, command and control centers, the leadership infrastructure, and the road network leading to the battlefield.

- Those targets that would directly demolish the will of the enemy in the field, i.e., an air attack on the entrenched Iraqi ground forces.

As a result of this combination of land power's *cheng* force and airpower's *ch'i*, the enemy was isolated and demoralized; his will to resist was broken. In this way, the enemy was defeated before the battle began. Airpower, then made possible a conventional war that was neither a war of annihilation, nor a protracted war, nor a war of attrition.

Airpower created the condition certain to produce a quick decision. This quick decision, for Sun Tzu, is the acme of skill. "Victory", he says, "is the object of war, not protracted operations, however, brilliantly conducted." ²⁷

Is this to say that airpower will play the central role in all future campaigns? Not necessarily.

Sun Tzu notes that how the *cheng* and *ch'i* forces are used are situational. "Their blows are correlated. The *cheng* and the *ch'i* are compared to two interlocking rings: "who can tell where one begins and the other ends?" Their possible permutations are infinite; the *cheng* effort may be transformed into a *ch'i*, a *ch'i* into a *cheng*."

The land forces played an important *ch'i* role during the short ground war. They, too, learned Sun Tzu's rule that "all warfare is based on deception" ²⁸ and used a variety of deceptive practices to precede their massive assault. Decoy forces, misleading large-scale amphibious threats, hidden troop movements, and the extensive use of spies enabled land power to operate their own *ch'i* forces to capitalize on the *ch'i* power of airpower and to avoid the predicted destruction which would have resulted from a frontal attack.

Using airpower in the manner of Sun Tzu had enabled American strategists to break away from the 100-year-old legacy of a strategy of annihilation. For a century they pursued the costly and mistaken notion of a Clausewitzian ideal of war which demanded that the "grand objective of all military action [which] is to overthrow the enemy—which means destroying his armed forces...[and] that battle is the one

²⁷ Sun Tzu, P. 41.

²⁸ Sun Tzu, p.66.

and only means that warfare can employ." 29

Pursuing--and winning--Sun Tzu's style of war also pointed out a significant structural difficulty with Clausewitz' remarkable trinity. Despite the fact that Clausewitz attempted to build a theory of war in which he held all the parts of his remarkable trinity in balance, "like an object suspended between three magnets," 30 the means he chooses to achieve his goals is through a great battle, directed at only one part of that triad, that is, at the army in the field.

Airpower enthusiasts have consistently argued that the field army was not the proper center of gravity upon which to concentrate military power. Instead, they tended to emphasize the targeting of the industrial infrastructure or those key targets which would increase the stress in the general population.

Sun Tzu, on the other hand was more flexible. He understood warfare not only applied to the three individual parts of the remarkable trinity. He recognized that it was the *connection* between the government, the people, and the army that was the real center of gravity. Sun Tzu stated that "the master conqueror frustrated his enemy's plans and broke up his alliances. He created cleavages between sovereign and minister, superiors and inferiors, commanders and subordinates." 31 It is the action of creating cleavages in the remarkable trinity, then, which is the center of gravity, not the members of the trinity itself.

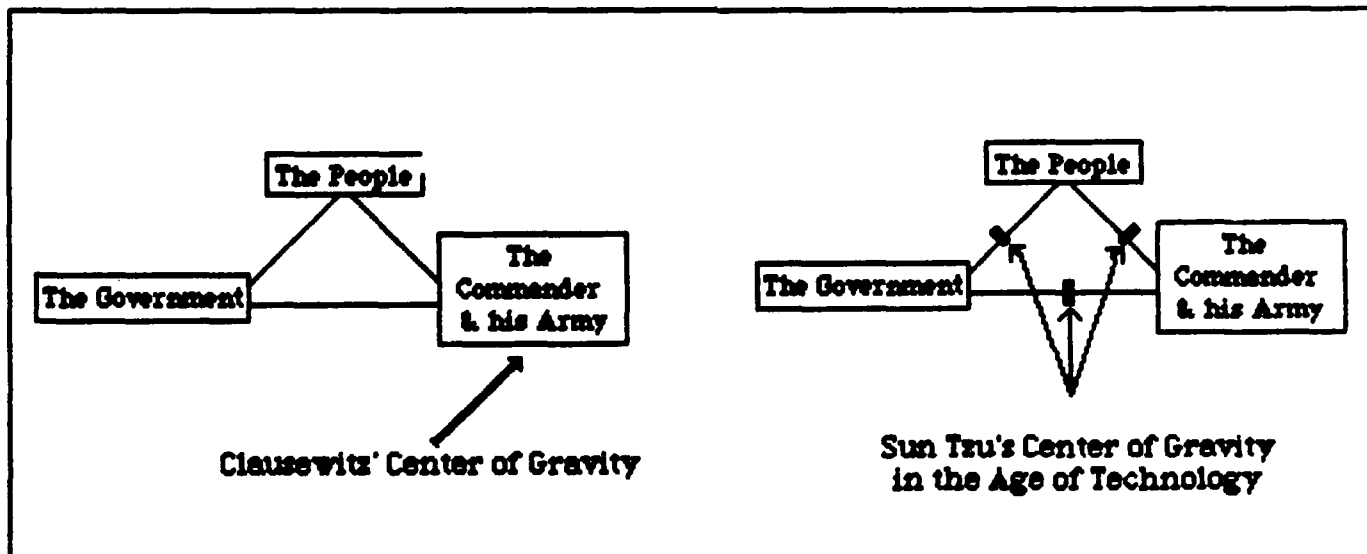
29 Clausewitz, p. 577.

30 Clausewitz, p. 89.

31 Sun Tzu, p. 39.

For Clausewitz and for the proponents of wars of annihilation, the focus of war is on only one part of the remarkable trinity, the army in the field. As a result, it was always true (until Desert Storm) that "the character of battle, like its name, is slaughter, and its price is blood." ³²

For Sun Tzu in the age of technology, the focal points of war are the links that connect the army with the government (the leadership) and with the people. The object is to demoralize the troops by severing them from the rest of the trinity, to attack the mind of the opposing military commander by breaking his communications. The center of gravity in a campaign is not, then, as Clausewitz states "a great battle." Rather the centers of gravity are those connective links and critical nodes between army in the field and the rest of the trinity, without which no battle can be forcefully prosecuted by the enemy. (see Diagram)



The role of airpower in a conventional campaign, then, is not to attack the will of the people in the enemy's homeland nor to frontally

³² Clausewitz, p. 76.

assault troops in the field in the opening maneuver of a campaign. With the technological advances made in aerospace power, the principle objective of conventional war does not, by necessity, have to entail the total destruction of enemy forces on the ground. Airpower enables us to gain military success in a theater of war by isolating the opponent. We can defeat him, not simply by destroying him, but-by disrupting his capability to fight-we can destroy his will to carry on the conflict.

BIBLIOGRAPHY

Clausewitz, Carl von. *On War*, ed. and trans. by Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press.

Douhet, Giulio. *The Command of the Air*, trans. by Dino Ferrari. Washington, DC: Office of Air Force History, 1983.

Futrell, Robert Frank. *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force*, Maxwell AFB, AL: Air University Press.

Handel, Michael I. "Clausewitz in the Age of Technology," *The Journal of Strategic Studies*, Jun/Sep 1986.

Howard, Michael. "The Forgotten Dimensions of Strategy," *Foreign Affairs*, Summer 1979.

Huntingdon, Samuel. "Playing to Win," *The National Interest*, Spring, 1986.

Pape, Robert A., Jr. "Coercive Air Power in the Vietnam War," *International Security*, Fall 1990.

Perry, William J. "Desert Storm and Deterrence," *Foreign Affairs*, Fall 1991, p. 47.

Spaatz, Carl A. "If We Should Have to Fight Again," *Life*, 5 July 1948, p. 35, in "Essay P: Strategic Attack," Air Force Manual 1-1, Volume II, Sep 91.

Sun Tzu, *The Art of War*, trans by Samuel B. Griffith. London: Oxford University Press, 1963.

Weigley, Russell F. *The American Way of War*. Bloomington IN: Indiana University Press.